IN THE CLAIMS:

Amendments to the Claims

Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1-104 (canceled)

105. (currently amended) A plasma etching apparatus for processing a sample inside a processing chamber comprising:

a sample stage disposed inside the processing chamber and having a sample located thereon:

means for introducing a processing gas inside the processing chamber: and

means for processing the sample using a plasma generated in a space inside the processing chamber which is surrounded by a sidewall member of the processing chamber which has a substantially cylindrical shape and is electrically grounded to earth, and which has an upper member of the processing chamber as a ceiling thereof disposed above the sample stage with the sidewall member being disposed adjacent thereto, the upper member including an electrically conductive plate disposed in opposition to the sample;

wherein during the processing of the sample, a bias supply applies a bias on a surface of the electrically conductive plate, and a temperature control means ~~for~~ controls a temperature of the sidewall member to be lower than a temperature of the sample and controls a temperature of the upper member to be higher than the temperature of the sample.

106. (previously presented) A plasma etching apparatus according to claim 105, wherein a circumferential portion of the upper member and an upper end of the sidewall member are disposed adjacent to each other.

107. (previously presented) A plasma etching apparatus according to claim 105, wherein a dielectric ring member is disposed at an outer periphery of the electrically conductive plate which constitutes a part of the upper member and which extends to the periphery thereof, and wherein the temperature control means controls a temperature of the dielectric ring member to be lower than the temperature of the electrically conductive plate during the processing of the sample.

108. (previously presented) A plasma etching apparatus according to claim 105, wherein the sidewall member has a jacket member which is removable from the processing chamber and has a heat exchanging medium which is circulated inside of the jacket member so as to control the temperature of the sidewall member.

109. (previously presented) A plasma etching apparatus according to claim 105, wherein the bias supply applies a radio frequency power to the electrically conductive plate to generate the bias thereon during the processing of the sample.

110. (previously presented) A plasma etching apparatus according to claim 106, wherein a dielectric ring member is disposed at an outer periphery of the electrically conductive plate which constitutes a part of the upper member and which extends to the periphery thereof, and wherein the temperature control means controls a temperature of the dielectric ring member to be lower than the temperature of the electrically conductive plate during the processing of the sample.

111. (previously presented) A plasma etching apparatus according to claim 106, wherein the sidewall member has a jacket member which is removable from the processing chamber and has a heat exchanging medium which is circulated inside of the jacket member so as to control the temperature of the sidewall member.

112. (previously presented) A plasma etching apparatus according to claim 106, wherein the bias supply applies a radio frequency power to the electrically conductive plate to generate the bias thereon during the processing of the sample.

113. (previously presented) A plasma etching apparatus for processing a sample using a plasma comprising:

a sample stage disposed in a space inside the vacuum vessel having the sample lower thereon, wherein the vacuum vessel comprises a sidewall member which has a substantially cylindrical shape and a housing which holds an upper member as a ceiling of the space disposed above the sample stage, the upper member being adjacent to the sidewall member and including an electrically conductive plate disposed in opposition to the sample, the sidewall member and the upper member surrounding the space;

means for introducing a processing gas inside the space; and

means for processing the sample using a plasma generated in the space;

wherein during processing of the sample, a bias supply applies a bias on a surface of the electrically conductive plate, and a temperature control means controls a temperature of the sidewall member to be lower than a temperature of the sample and controls a temperature of the upper member to be higher than the temperature of the sample, the sidewall member and the upper member being disposed to as to face the plasma.

114. (previously presented) A plasma etching apparatus according to claim 113, wherein a dielectric ring member is disposed at an outer periphery of the electrically conductive plate and which constitutes a part of the upper member and extends to the periphery thereof, and wherein the temperature control means controls a temperature of the dielectric ring member to be lower than the temperature of the electrically conductive plate during the processing of the sample.

115. (previously presented) A plasma etching apparatus according to claim 113, wherein the bias supply applies a radio frequency power to the electrically conductive plate to generate the bias thereon during the processing of the sample.

116. (previously presented) A plasma etching apparatus according to claim 113, wherein the sidewall member has a jacket member which is removable from the processing chamber and has a heat exchanging medium which is circulated inside of the jacket member so as to control the temperature of the sidewall member.

117. (previously presented) A plasma etching apparatus according to claim 114, wherein the bias supply applies a radio frequency power to the electrically conductive plate to generate the bias thereon during the processing of the sample.

118. (previously presented) A plasma etching apparatus according to claim 114, wherein the sidewall member has a jacket member which is removable from the processing chamber and has a heat exchanging medium which is circulated inside of the jacket member so as to control the temperature of the sidewall member.

119. (previously presented) A plasma etching apparatus according to claim 113, wherein a circumferential portion of the upper member and an upper end of the sidewall member are disposed adjacent to each other.